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In the plan of instructions of the Nineteenth Party Congress concerning the Fifth Five-Year Plan for Development of the National Economy of the Soviet Union, serious attention is devoted to the mechanization of labor-consuming work. Comrade I. V. Stalin pointed out that "...mechanization of work processes is that new for us and decisive force without which it is impossible to maintain our tempos and new scales of production."

The highest form of mechanization of work processes is automation. It is natural that in the field of communications, also, automation of the work processes must now become a primary task. At a number of telegraph centers automation of the transmission and reception of telegrams is continuously increasing. Correct solution of this task will not only eliminate the likelihood of distortion of telegrams but will also increase the quality of telegraph communications.

In our telegraph communications systems electromechanical teletypewriters are employed in which the basic operation, transmission of telegrams, is performed manually. In addition to this basic operation, the present systems of telegraph communications require the expenditure of manual labor in counting words, gluing and unrolling telegraph tapes, etc.

Manual processing of telegrams in several stages, especially in transmission, is gradually being replaced by automatic processing. However, the methods of automation in use only partially solve the problem. For the rest, the processing of telegrams is done by hand as before.

Full automation of the process of handling telegrams in transmission and reception (mechanization of the telegraph operator's work) is possible only on the mass introduction of electric methods of transmitting fixed images.

In the past it has been difficult to consider the large-scale use of electric methods of transmitting fixed images in telegraphy. The existing telegraph network was an inadequate base for phototelegraphy. Phototelegraphy was achieved only on special photochannels, and later along telephone channels. Even for intercity telephone communications there was always a shortage of the latter channels.

The indicated problem has now been solved to a large degree by the work of [illegible] engineers I. L. Koblenets (Central Scientific Research Institute of the Ministry of Communications USSR) and G. G. Sokolov (Moscow Central Telegraph Exchange). These engineers developed the theory and showed the practical possibility of using extremely narrow voice-frequency carrier telegraph (TT) channels for phototelegraphy. Thus, the existing telegraph communications network and, above all, the high-capacity, inexpensive telegraph channel (TT channel) may be used for the most advanced and progressive form of documentary electrical communications.

In order to replace the existing manual systems of telegraph equipment it is necessary to develop an extremely simple, high-capacity phototelegraph unit permitting automatic transmission of any documentary information (manuscript and printed text, drawings, pictures, etc).

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Processing of through phototelegrams may be achieved by three methods: by direct electrical transit, with the aid of magnetic recording, and, finally, by conventional transceiving. Copies of phototelegrams are made at the receiving stations by means of rotator tape.

The problem of rates may be solved by any means convenient for one or another stage in the development of phototelegraphy. In any event, with an increase in phototelegraph traffic and the acquirement of operational experience it is advisable to change to the system of payment for photo-telegram blanks "lightning," urgent, ordinary, letter telegram, etc. Certain of these blanks, for example, the letter-telegram blanks, after being filled out, may be dropped in mail boxes by the senders; hence, telegrams of this type should be transmitted, for the most part, during the hours of least traffic. Filled out telegram blanks of the other categories will be given to mailmen or delivered directly to the communications section. Moreover, the filled out blanks may be received by means of a special machine linked with the sorting station of the telegraph center.

In addition to the above advantages, phototelegraphic communications will permit a considerable decrease in the time spent in processing telegrams at various stages within the telegraph center, reducing the number of processing steps by half. Thus, with introduction of the system of paying for the blanks themselves, a separate office as a step in the processing of telegrams is eliminated and the blanks may be sold at communications enterprises and at any kiosk.

The sorting of telegrams is retained, but the nature of the operation at this stage in the processing is changed considerably. Sorting is done in conjunction with transmission. In addition, transmission of the telegram and the various associated operations (marking the time of transmission, registering the transmitted telegrams) are performed automatically.

Reception of telegrams by the receiving equipment is also performed automatically, with automatic recording of the receiving time and registering of received telegrams by means of special counters, etc. Sorting of received telegrams is combined with sorting of telegrams to be transmitted, since all received telegrams must be transmitted to another city (through telegrams), to a city branch (incoming telegrams), or, finally, through a UHF transmitter to cruising ships equipped with automatic radio-photo-receivers and radiotelephones.

The described method of processing telegrams does not require workers of many of the previous specialities -- telegraph operators, controllers, cashiers, etc. Chiefly technicians, engineers, and skilled operators, servicing up to 8-10 receiving and transmitting equipments, will remain. As a result tens of thousands of persons will be freed for other branches of communications work.

Transmission of telegrams will be conducted at normal speed along TT channels and steel wire circuits, at increased speed along heavily loaded trunk lines (or telephone channels), and, finally, by means of unique, rapid acting systems with transmission along concentric (coaxial) cables and UHF relay.

The existing transmissions of TASS [Telegraph Agency of the USSR] and the aerophotological service are also converted from Morse equipment and other systems of radiography (that is, to the electrical method of transmission of fixed images). Radiographic transmission is replacing the slow dictation of TASS information for rayon newspapers, etc. Automatic photo-dispatcher communications in railroad transport, in the constructions of

communications, and in production is rapidly replacing the ordinary telegraph and postal service, for it provides the accurate documentation of the postal service and the rapid service of electrical communications.

Such is the outlook for the telegraph communications system in the Soviet Union in the near future. The solution of this most important problem will insure the Soviet Union's precedence in the creation of the most technically advanced system of documentary electrical communications.

In order to accomplish the new system of telegraph communications it is necessary to concentrate every effort on the creation of a simple, small, automatic equipment. For the development of such equipment it is necessary to attract all prominent specialists in the field of radiography, phototelegraphy, television, optics, etc. Solution of the problem will be more rapid and effective with the close collaboration of the Ministry of Communications and other ministries with the Academy of Sciences USSR.

It is necessary that the All-Union Scientific-Technical Society of Radio Engineering and Electrical Communications imeni A. S. Popov also take an active part in the solution of this problem. Reports, lecturers, discussions, and consultations conducted by members of the society at communications enterprises, institutes, and organizations must mobilize our activity for the creation of electrical communications worthy of a communist society

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